

Claims

We claim:

1. Circuitry for terminating a phone line connection, comprising:
5 powered side circuitry operable to communicate digitally with phone line side circuitry, said
 digital communication comprising a digital data stream;
 phone line side circuitry operable to communicate digitally with powered side circuitry, said
 digital communication between said powered side circuitry and said phone line side
 circuitry comprising a digital data stream transmitted through an isolation barrier; and
10 encode and decode circuitry coupled to said digital data stream to generate an encoded
 digital signal for transmission and receipt across said isolation barrier.
2. The circuitry of claim 1, further comprising DSL circuitry that may be used to generate DSL
information for transmission across said isolation barrier.
- 15 3. The circuitry of claim 2, wherein said isolation barrier is comprised of one or more capacitors.
4. The circuitry of claim 2, wherein said isolation barrier is comprised of a transformer and one or
more capacitors.
- 20 5. The circuitry of claim 4, wherein said transformer is comprised of a pulse transformer.
6. The circuitry of claim 2, wherein said phone line side circuitry further comprises phone line side
DSL circuitry that may be used for receiving said DSL information transmitted across said isolation
25 barrier.
7. The circuitry of claim 6, wherein said isolation barrier is comprised of a transformer.
8. The circuitry of claim 7, wherein said transformer powers said phone line side DSL circuitry.
- 30 9. The circuitry of claim 7, wherein said DSL information is transmitted across said transformer.

10. A method of operating circuitry for terminating a phone line connection, comprising:
providing phone line side circuitry operable to communicate with a capacitive isolation barrier
and the phone line connection;
utilizing digital information transmitted across the capacitive isolation barrier to provide a phone
line side clock; and
utilizing digital information transmitted across the capacitive isolation barrier to provide a power
supply for at least a portion of the phone line side circuitry.

11. The method of claim 10, wherein said phone line side circuitry further comprises DSL circuitry
that may be used for receiving DSL information transmitted across said capacitive isolation barrier.

12. The method of claim 11, wherein said capacitive isolation barrier is comprised of a plurality of
capacitors.

13. The method of claim 11, wherein said capacitive isolation barrier is comprised of at least one
transformer and one or more capacitors.

14. The method of claim 13, wherein said transformer is comprised of a pulse transformer.

15. The method of claim 11 further comprising providing powered side circuitry, wherein said
powered side circuitry further comprises powered side DSL circuitry that may be used for transmitting
DSL information across said capacitive isolation barrier.

16. The method of claim 15, wherein said capacitive isolation barrier is comprised of at least one
transformer.

17. The method of claim 16, wherein said transformer powers said DSL circuitry.

18. The method of claim 16, wherein said DSL information is transmitted across said transformer.

19. Circuitry for terminating a phone line connection, comprising:
powered side circuitry operable to communicate digitally with phone line side circuitry, said
digital communication comprising a digital data stream transmitted across a isolation
5 barrier through a first bi-directional connection; the isolation barrier including at least
one capacitor and
phone line side circuitry operable to communicate digitally with powered side circuitry, said
digital communication comprising a digital data stream transmitted across said isolation
barrier through a second bi-directional connection.

10 20. The circuitry of claim 19, wherein said powered side circuitry further comprises powered side
DSL circuitry and said phone line side circuitry further comprises phone line side DSL circuitry.

21. The circuitry of claim 20, wherein said isolation barrier comprises a plurality of capacitors.

15 22. The circuitry of claim 21, wherein said isolation barrier further comprises a transformer.

23. The circuitry of claim 22, wherein said transformer is a pulse transformer.

20 24. The circuitry of claim 22, wherein said transformer powers said phone line side DSL circuitry.

25 25. The circuitry of claim 22, wherein said powered side DSL circuitry includes encode circuitry to
generate an encoded digital DSL signal for transmission across said isolation barrier and wherein said
phone line side DSL circuitry includes decode circuitry to generate a decoded digital DSL signal from
said encoded digital DSL signal.

26. A method for communicating with phone lines, comprising:
converting a digital signal into a digital data stream;
communicating said digital data stream across an isolation barrier from a bi-directional
30 connection on powered side circuitry to a bi-directional connection on phone line side

circuitry, said communication being bidirectional through at least one capacitive element; and
utilizing the digital data stream to generate a power supply within the phone line side circuitry.

5 27. The method of claim 26, wherein said powered side circuitry includes powered side DSL circuitry and wherein said phone line side circuitry includes phone line side DSL circuitry.

28. The method of claim 27, wherein said isolation barrier comprises a plurality of capacitors.

10 29. The method of claim 28, wherein said isolation barrier further comprises a transformer.

30. The method of claim 29, wherein said phone line side DSL circuitry is powered by said transformer.

15 31. Circuitry for terminating a phone line connection, comprising:
powered side circuitry operable to communicate digitally with phone line side circuitry through a
first node capable of communicating with a capacitive isolation barrier;
phone line side circuitry operable to communicate digitally with the powered side circuitry
through a second node capable of communicating with the capacitive isolation barrier;
20 a clock signal within the phone line side circuitry, the clock signal capable of being generated
from information transmitted across the capacitive isolation barrier;
at least one power supply within the phone line side circuitry, the power supply capable
of being generated from information transmitted across the capacitive isolation
barrier; and
25 at least one control signal within the phone line side circuitry, the control signal being capable of
being transmitted across the capacitive isolation barrier.

32. The circuitry of claim 31, wherein the powered side circuitry further comprises powered side DSL circuitry and the phone line side circuitry further comprises phone line side DSL circuitry.

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33. The circuitry of claim 32, wherein the capacitive isolation barrier further comprises a transformer.

34. The circuitry of claim 33, wherein the transformer is a pulse transformer.

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35. The circuitry of claim 33, wherein said phone line side DSL circuitry is powered by said transformer.